

REMARKS

The examiner has objected to claims 4-11 because of certain informalities. Claim 4, upon which claims 5-11 depend directly or indirectly, has been amended to correct the informalities.

Claims 1-11 have been rejected under 35 U.S.C. 102 (e) as being anticipated by U.S. Patent to Frana et al, 6,479,764 B1, hereinafter Frana et al. This rejection is not thought to be well taken for the following reasons.

First, Frana et al specifically teach a "via [that] includes a first path capable of transmitting a forward current from [a] first to [a] second layer and a second path capable of transmitting a return current resulting from the forward current...." (ABSTRACT) Applicants do not have such a structure. In applicants' structure, a first via carries only signals between a first and a second surface, and a second via surrounds the first via wherein signals are not carried. This is claimed in all of the claims, and is important to applicants' structure for the following reasons.

In the "Field of the Invention" of Frana et al, it is stated: "The present invention relates to a via structure that reduce inductance in the current path when used in printed circuit boards...." This is reiterated in paragraph 1, lines 59 to 63. Frana et al does not mention any specific relation to the signal integrity (distortion, reflection, or attenuation) of the transmission of high speed signals. This integrity requires that the "coaxial" structure be in a very precise relationship with its own constituents. Frana et al lose this coaxial structure in some of the presented embodiments when they teach non-symmetrical constructions (Figs. 4 to 9) where the nested section becomes a section of a

point to point pairs of power connections to align return current paths, becoming similar to Fasano, U.S. Patent No. 5,949,030, hereinafter Fasano.

Furthermore, the construction of the nested structure does not offer shielding and adequate referencing for the trace's impedance value to the signal requirements "across any given signal plane" as does applicants' disclosure and claims.

As an example in Fig. 1 of Frana et al, the shielding of the signal and the referencing to the GND potential of the outer jacket is not continuous to the length of the signal running in the center of the structure (this is similar to the Fasano embodiment). Similarly for Fig. 2, and moreover very visible in Fig. 3, the shielding and contribution to the value of the impedance of the high speed trace is "lost" along the path when the different components of the structure lose spatial relation sitting on different planes or distances. This is replicated also in Figs. 7, 8 and 9 where reference structures are moved at different distances losing continuity in providing constant reference to the signal line. Such a behavior is also shown in Figs. 7 and 8 where the S1 trace is coupled alternatively with the V1 on one side and the V2 on the opposite side delivering a transition in the reference power domains which causes significant signal reflection due to the impedance discontinuity (unacceptable from the signal integrity point of view at high frequencies above 1 GHz).

Prior art is anticipatory only if every element of the claimed invention is disclosed in a single item of prior art in the form literally defined in the claim. Jamesbury Corp. v. Litton Indus. Products, 756 F.2d 1556, 225 USPQ 253 (Fed. Cir. 1985); Atlas Powder Co. v. du Pont, 750 F.2d 1569, 224 USPQ 409 (Fed. Cir. 1984); American Hospital Supply v. Travenol Labs, 745 F.2d 1, 223 USPQ 577 (Fed. Cir. 1984).

"Anticipation requires identity of the claimed process and a process of the prior art; the claimed process, including each step thereof, must have been described or embodied, either expressly or inherently, in a single reference" Glaverbel Societe Anonyme v. Northlake Marketing & Supply, Inc. 45 F. 3d 1550, 1554, 33 USPQ2d 1496, 1498 (Fed. Cir. 1995).

Since each of claims 1 and 4, the only independent claims herein, contain specific reference to the via structure, which is different from Frana et al, these claims are allowable thereover.

Claims 2 and 3 are dependent upon claim 1, directly or indirectly, and claims 5-11 are dependent upon claim 4, directly or indirectly, and for the same reasons are believed to be allowable.

Moreover, with respect to claim 4, the applicability of Figure 7 of Frana et al is not understood. Claim 4 specifically requires *two vias* extending from conductive tracts on opposite surfaces, and Frana et al has only *one via* 180 extending between traces on opposite surfaces. Thus for this additional reason claim 4, and those dependent thereon are allowable. With respect to claim 5, this claim is dependent upon claim 4 and requires a specific relationship of the core, with traces thereon, to the conductive surfaces, which is not taught nor suggested by Frana et al. With respect to claims 6 and 7, these require a fifth conductive tract surrounding the third conductive tract and aligned with the first conductive tract. This is not taught nor suggested by Frana et al.

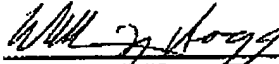
Claim 8 is dependent upon claim 7 and requires a sixth conductive tract on the third conductive layer in a specific relationship with the third conductive tract and the second conductive tract. This is not taught nor suggested by Frana et al.

Claims 9, 10, and 11 all require specific relationships, which cannot find counterparts in Frana et al.

In view of the above, it is believed that each of the claims in the application is distinguishable one from the other and over the prior art. Therefore, reconsideration and allowance of the claims are respectfully requested.

Respectfully submitted,

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